

The Greenhouse Effect: Israel Provides Innovation-Based Solution to the Global Food and Climate Crises

The agricultural version of the 'Start-up Nation' was launched this week in the form of "NatureGrowth Incubator", an inspiring innovation center, which provides the infrastructure for the creation of dozens of leading companies in global advanced agriculture. The goal is the creation of 80 new technological solutions, based purely on Israeli science, which will help the world grow nutritious, inexpensive and environmentally-friendly fresh produce.

By Guy Fishkin, in collaboration with NatureGrowth Incubator

The climate crisis, together with the covid pandemic, grabbed most of the headlines in Israel and the world as the most newsworthy global-scale events in the last two years. Endless broadcasts, coverage and information was shared by the media. However, one less covered topic which should unsettle our sleep is the global food crisis. This is an immediate and acute crisis which is strongly connected to the climate crisis (and covid) and has gone under the radar.

To understand the extent of the crisis, here are some troubling statistics from a recent report of the UN Food and Agricultural Organization: Almost one billion people are currently in the state of hunger and over two billion people are defined as 'under nourished'. In addition, 22% of children ages five and below have not reached their natural height to due lack of food.

The World is on the Verge of a Major Food Shortage

We are facing a serious global food crisis, the likes of which we have not experienced until today. According to economists, food prices are already soaring at a faster rate than inflation, which is also reaching new levels. Here, too, there are no shortage of examples that illustrate the trend: the prices of coffee beans, since the outbreak of the Covid19 outbreak, have risen by more than 70%; France produced the smallest amount of wine grapes this year since 1957. And what about Italy?



Alon Davidi, the mayor of Sderot and Oren Heiman, NatureGrowth CEO

Italian farmers experienced unprecedented damage last summer, after over 30% of the fresh field crops were completely destroyed due to a heavy drought followed by a historic set of hailstorms.

These processes were accompanied by a set of harmful geopolitical events, led by the fighting in Ukraine (the 'Grain Barn' of Europe) which had to reluctantly stop exporting agricultural products such as wheat, sunflower oil and fertilizer. Additional instigators to the global food crisis include the disruptions in the global supply chain due to the Covid19 pandemic, accelerated urbanization reducing land available for agricultural crops, increased salinity of the soil and decreased oxygen in oceans due to climate changes. Add to that, the growing number of trends in "human pickiness" both in developed and developing countries, when more and more people place stricter demands on the food market, including veganism and vegetarianism, organic, preservative-free and "close to home" produce.

As a result, agricultural resources around the world

are shrinking day by day. More and more scientists are forecasting a severe global food shortage in the coming years. It is clear that such a crisis can only be overcome through technological initiatives based on innovation and R&D.

Israel, nicknamed the 'start-up nation' has proven to be a major global science center with a long series of successful innovations. Israel is trying to respond in the sustainability arena in general and in the field of ag-tech in particular and envisions utilizing the knowledge and skills of local minds to find solutions to the crisis.

An Innovation Center for Advanced Agriculture

One of the inspiring ventures focused on solving the food crisis is the NatureGrowth Innovation Center (locally nicknamed the "Sderot Incubator"). 65 Israeli and foreign businessmen and scientists from the worlds of agriculture, academia, government, entrepreneurship, finance and regulation, came together to launch this project, based on Israeli science. The founders joined together to establish an ambitious model, aimed to establish 80 globally-disruptive companies in the various fields of advanced agriculture by 2030.

In 2022, this group raised, both from its members in the form of financial investments and from the municipality of Sderot in the form of construction commitments, a sum of over two million dollars, to establish an innovation center that provides optimal conditions for research and development of global solutions in advanced agriculture.

The founders have recently launched the second part of their fundraising effort, seeking \$40,000,000 of commitments from large-scale global agricultural and food companies, to funnel investment in the 80 innovations soon to be selected.

The idea of establishing the technological incubator in the field of sustainability was conceived by Oren Heiman, a NYC/Tel Aviv based lawyer and businessman, who created the vision, assembled the initial founders and is realizing the dream, step by step.

"From the beginning, the incubator's business model advocated the promotion of an innovation center in the

area surrounding Gaza, to support the local community and Israel, along with the fact that the Western Negev is the region with the largest concentration of agricultural produce in the region," Heiman recounts the background that led to the collaboration with Sderot as the city where the center will be established. "These are also why the Israeli government provides increased grants in this region".

Indeed, earlier this month, on September 19, Sderot Municipality launched the first phase of the Nature Growth Agtech Innovation Center, in a cornerstone laying ceremony led by mayor, Alon Davidi. The plan, as rolled out at the ceremony, calls for the establishment, by 2030, of 80 Israeli companies that will serve as flagships in the field of advanced agriculture in the world.

Providing Real Solutions at the Global Level

The center, which is expected to open its doors by the end of the year, will include a magnificent office building with advanced laboratories, offices and related services, as it is intended to serve as a one-stop-shop for technologies and ventures in five main areas: plant biology and genomics (including advanced pesticides and fertilizers), greenhouse agriculture (including control systems, sensors, artificial intelligence, software systems and robotics), smart growing systems (greenhouses, hydroponics, irrigation and energy systems for agriculture including desert agriculture), animals (feeding, health, industrialized breeding, aquaculture) and post-harvest technologies (transportation, shelf life extension, supply chain of fresh produce).

How do the founders intend to choose the technologies to be incubated?

Heiman: "We established a professional investment committee with scientists with advanced degrees in all relevant fields of agriculture, together with businessmen who founded and managed companies in the Agtech field and experts in grants, intellectual property and tech transfer and commercialization. The 18-member committee, led by our Chief Investment Officer, created a clear application and selection process, with criteria



Cornerstone Ceremony for the NatureGrowth incubator



Visit of NatureGrowth board members at Evogene Labs



Groundbreaking Ceremony for NatureGrowth Agricultural Innovation Center in Sderot



NatureGrowth board visiting farmers at the western Negev

estimating the chances of success of each venture from a scientific and business point of view. We are looking for projects that have the potential to reach valuations of at least \$200,000,000 and that will have a maturation period of no more than two years. It may sound pretentious, but we strongly believe in the abilities of Israeli scientists and entrepreneurs to provide real solutions at the global level, which will mature into real products within a few years."

One of the 65 founders, who currently serves as a board member, is Eliad Josephson, who lives in the US and serves as a consultant to various companies in the fields of sustainability and technology on strategy and financing, including working with Prof. Kashi's team from the Technion in the genetic development of yeast for the food and agriculture industry. "Despite the fact that our investment committee started operating in June and we are still in stealth mode, so far, more than 60 technologies have contacted us, most of them from a network of universities and research institutions with which we have

established working relationships. From all of these, three companies will be chosen and announced by October 15th as the first companies to staff the center already this coming winter." Another board member in the greenhouse is Thomas Teichman, who represents an agricultural group from Brazil, set to be one of the global investors.

Reducing the Environmental Damage Caused by Agriculture

It is evident that the managers of the incubator are committed, excited and united in preparation for the launch of the center. Heiman confirms this: "In the last months leading up to this moment, extraordinary work was done by people with an environmental vision and strong faith in Israeli technology. We see the incubator as a global project, that is, one in which most of the funding, over 75% of it, will come from foreign investors. In the last few weeks we have commenced discussions with partners and investors from South America, North

America, Europe, South Africa and the Gulf countries (thanks to the Abraham agreements) and we plan to also reach India, Singapore and Australia by the end of the year.

At the end of the day, it should be understood that the solutions we are aiming at concern global problems that trouble agriculture all over the world. The companies that emerge from the incubator will turn to market their products and solutions wherever there is a demand for them. In doing so, the incubator will further establish Israel's position as a principal country, solving global problems.

"The technologies that will be developed within the incubator will mitigate not only the global food crisis, but also help solve the climate crisis. The agricultural sector is known as one of the most polluting sectors on the planet that harms our climate, responsible for over 25% of carbon emissions. Our goal will be to develop not only technologies for growing food under the new climate conditions, but also those capable of reducing the environmental damage caused by agriculture. We must today find a way to continue providing food to humans, with minimal damage to the continuation of the warming trend of the earth".

Full envelope for entrepreneurs, high return on investment

As mentioned, according to the plan, the Sderot incubator will operate for eight years, until the end of 2030. During this time period, on average, one new technology will be accepted every month and begin a one-to-two-year incubation period. The broad basket of services that will be offered includes, among other things, unparalleled budgets, facilities of the highest standards, staffing, legal and financial services and access to a battery of first-class professionals in Israel.

"For scientists and entrepreneurs, we offer a state-of-the-art incubator, with laboratories that include, among other things, access to advanced computational tools in biology, chemistry and genetics (such as those of Evogene of Rehovot), and financial support in levels not recognized in Israel," Heiman explains.

"The role of the incubator is to provide entrepreneurs with the full envelope, so that they can concentrate on development and research and ultimately formulate a product or idea that is sufficiently advanced, so that the company can, eventually, leave the incubator, raise money on its own and become an independent and globally successful company," he adds.

How many companies out of the 80 are likely to succeed in your estimate?

This is naturally a complex question that depends on many factors, only some of which depend on how we manage the incubator. According to the financial model we formulated, and given the increased rate of grants given to start-up companies in the Gaza surrounding area (at a rate of up to 75%), even if a small number of the incubated companies succeeds in reaching global dimensions and high values, our investors will have a high return on their investment. The professional mechanism we created for the examination and acceptance of the technologies is a significant component that will lead to a high success rate."

How would you define "success" in these terms?

"What is important to us is to create scientific and practical solutions to global agricultural problems and the promotion of the burning sustainability issues. These will be reflected both in reducing the impact of agriculture on the climate crisis and in preparing to grow fresh and nutritious food in the new climate conditions. The successful combination of these two elements will help turn the incubator into a project of historical importance."



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